Abstracts

Analysis and Correction of Echo Due to Mode Conversion in WC-281 Waveguide

R. Walker. "Analysis and Correction of Echo Due to Mode Conversion in WC-281 Waveguide." 1995 Transactions on Microwave Theory and Techniques 43.3 (Mar. 1995 [T-MTT]): 592-600.

Testing of the antenna/waveguide systems of a long-haul, high-capacity microwave radio route showed unexpected high levels of group delay ripple. Initial analysis of these measurement results incorrectly indicated echo levels as high as 35 dB below wanted direct signal, as interpreted using a simplistic analysis technique which was later shown to be as much as 10-15 dB too pessimistic. Application of special Fourier analysis techniques to the test results subsequently showed that many of the cases of concern were in fact well within established system requirements. In other cases, it was found that installation of TE/sub 21/ filters could readily be used to absorb the echo energy. The performance of the QAM radio used in this application was also characterized in terms of the residual BER tolerance to multiple echoes. The source of the echoes was isolated to TE/sub 21/ mode generation within the WC-281 waveguide. To ensure the quality of new installations without the need for the application of filters, a method of pre-installation testing of waveguide sections to determine their individual moding levels was also established.

❑ Return to main document.